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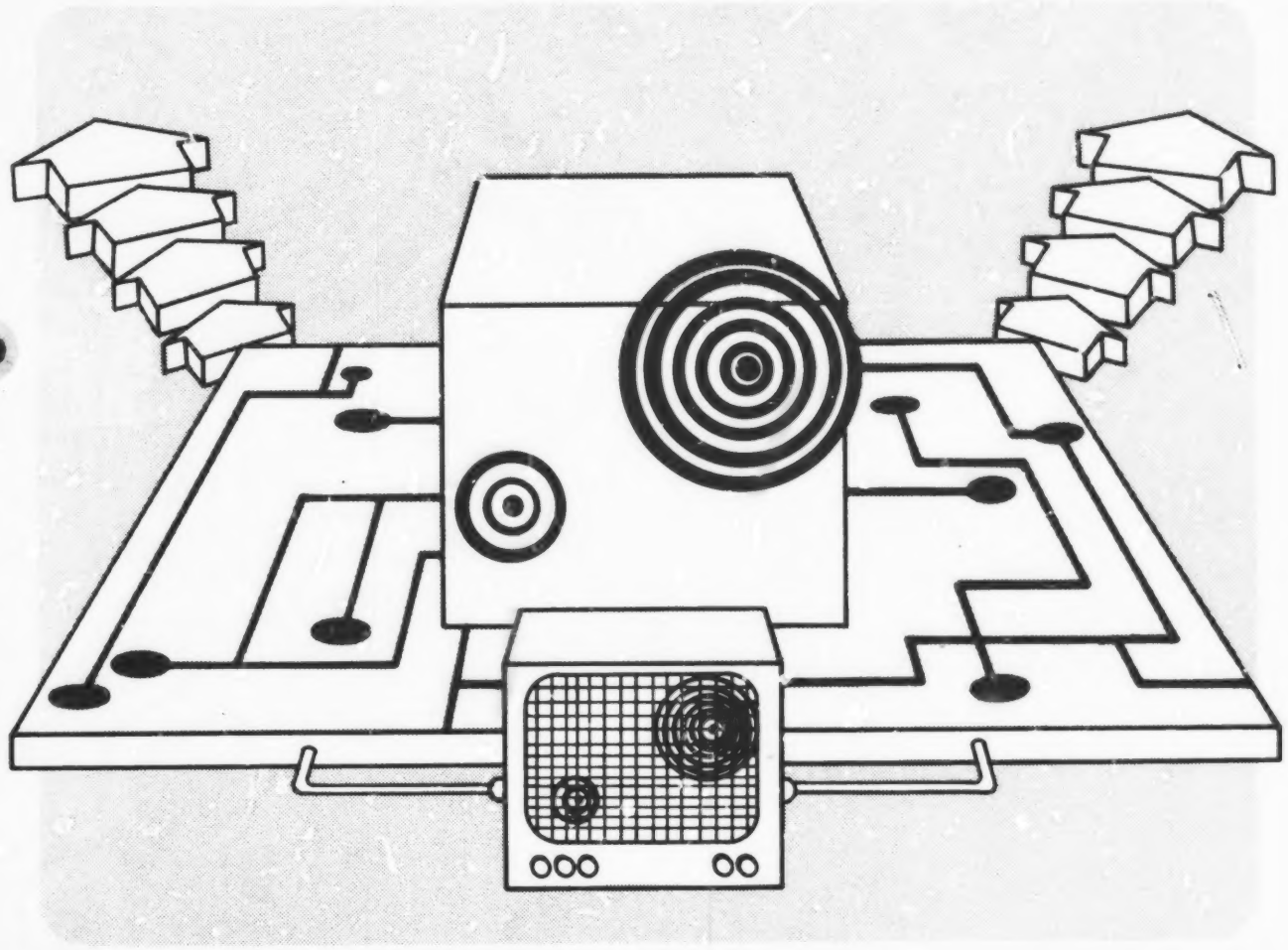
Maintenance Manual

Security System for Emergency Operations Center



COMPLETED

MAINTENANCE MANUAL

SECURITY SYSTEM FOR EMERGENCY MANAGEMENT CENTER

Federal Emergency
Management Agency

Maintenance Manual
Security System for
Emergency Management Center

Introduction

The purpose of this manual is to guide you on how to maintain the equipment that makes up a security system. The information in this manual is only a **supplement** to the recommended maintenance information supplied in the service manuals provided by the manufacturers of the equipment. **Always follow the maintenance procedures provided in the manufacturer's manuals.** This manual will help you understand why maintenance is necessary. This manual will also be helpful if the manufacturer's maintenance manuals are not immediately available.

Description of a Security System

An emergency management center, by its very nature, will be unoccupied for a great deal of time, except for occasional maintenance work. A security system for the center is only required if the facility is isolated from other public buildings. If the center is located in a heavily used building such as the city hall, a security system should be considered in light of other available security measures, and then coordinated with them.

A typical security system for an EMC consists of a main control box that monitors a number of detection devices, a power supply and some sort of signaling device. Decide what kind of protection you want for your center, then choose the most appropriate detection devices that will address your potential security problems. The following table lists some commonly used devices:

Detection Devices

smoke detectors	heat detectors
switches	magnetic contacts
mechanical contacts	magnetic field sensors
pezoelectric sensors	pressure mats

Each of these devices is sensitive to certain types of objects in its environment. The indication of some object or event activates the device to simply close an electrical circuit, sounding an alarm to indicate that there is a problem.

These devices are strategically positioned in the emergency management center, and then connected to the main control. The detection devices activate a circuit between the device and the main control panel. The main control panel, in turn, monitors each circuit with a silicone controlled rectifier (SCR). The SCR acts as a switch between a detection device and an alarm, sounding the alarm whenever the switch is activated.

Power is supplied to a security system via the center's main electrical outlet. A back-up battery supply is set up, to provide current automatically if the main source fails.

An alarm device is necessary to initiate a response to an emergency and to startle an intruder. Alarms can range from electronic sirens, buzzers, or bells to automatic dialing systems. If the emergency management center is isolated, it would be appropriate to consider some sort of system to transmit the alarm signal to a manned station. This transmission can be accomplished with a radio link, a dedicated telephone line, or with an automatic dialer.

Preventive Maintenance

To ensure that the components of your security system work in an emergency, you should develop a program where you **regularly check the devices to spot small troubles before they become big problems**. A program of coordinated semiannual maintenance checks prevent serious problems from suddenly happening.

Routinely clean all the units. Check for frayed connections and loose bolts and parts; inspect the switches, batteries, and circuits. These checks are not normally mentioned in manufacturer's manuals, but can lead to more serious problems.

Equipment and Spare Parts

Only ordinary mechanical and electrical tools are needed to perform most maintenance on this equipment.

Maintain a list of spare parts for each piece of equipment in your system. The following table gives you a list of commonly needed parts.

Spare Parts: Security System

Name of part	Quantity
no. 24 wire	100 ft
mechanical contacts	2
foil contacts	2

Safety

Follow safety precautions outlined in maintenance manuals supplied by the manufacturer. Remember, only a qualified electronics technician should attempt to repair any serious electrical problems. These devices do not pose any **special** safety hazards. Nevertheless, there may be safety suggestions in the manufacturer's manuals related, for instance, to the wiring of the specific devices to the main control panel. Read and adhere to these suggestions.

6-Month Maintenance Checks

1) Test all alarms. Notify fire department and/or central alarm receiving station of test. Notify all personnel of test. Inhibit alarm transmissions by depressing "transmitter disconnect" switch or "zone disable" switches on all signaling devices.

2) Follow these procedures when testing system:

a) depress "system test" switch and check that all indicators light (except "zone alarm" light) and that all active signaling devices sound.

b) release "system test" switch and check that all alarm indicators light.

"A.C. power" LED should remain lit at all times. Momentarily depress "system reset" at end of test.

3) Activate a zone via an alarm initiating device and check that all active signaling devices sound. All zone and system alarm lamps should light. Reset system. Repeat the same test for each zone.

4) Momentarily activate the "system rest," "transmitter disconnect" and "zone disable" switches one at a time, testing for a trouble signal.

5) Depress "trouble silence" switch and check for a steady audible signal. Return switch to normal position.

6) Open circuits, one at a time, and check for trouble signal. WARNING: Disconnect all power sources before working in panel, on circuits. Test circuits to alarms, circuits in specific zones, and other circuits, depending on the perational system.

7) Test batteries. Measure battery voltage while signaling devices sounding. Replace any battery with terminal voltage less than 85% of rating. Aftering testing batteries, reapply normal power, depressing "system reset" switch.

8) Test system 48 hours after installing new batteries, to test their response to power demands of equipment. Remove normal power supply and put battery system on line. Depress "system test" switch, checking that all indicators light (except "zone alarm" light) and that all active signaling devices sound. Release "system test" switch and check that all alarm indicators light. Reapply normal power, depressing "system reset" switch.

9) Return all switches to normal outward positions upon completion of tests. Notify personnel at fire station and/or central alarm receiving station that testing completed.

Corrective Maintenance: Troubleshooting

Some equipment malfunctions may be discovered during inspection or in the actual use of the security system. Perform the tests on the following table to locate, and possibly correct, the problem.

PLEASE NOTE: This manual does not attempt to list all possible malfunctions that could occur nor can we suggest all possible remedies. Consult the manufacturer's manuals if a malfunction is not listed or it is not corrected by a prescribed procedure.

Corrective Maintenance: Security System for Emergency Management Center

Malfunction	Possible Cause	Recommendation
1. False alarms	■ induced interference; main cables too close to power supply	■ relocate power cables
	■ interference from radio signals	■ make sure transmission lines are properly shielded
	■ lightning	■ increase shielding of main control panel
2. System won't activate	■ open connection at detection device	■ close door or window or remove obstacle in front of or on detection device
	■ break in wire connecting detection device and panel box	■ find break and repair as necessary
	■ defective detection device	■ locate and repair as necessary
	■ low battery	■ replace battery when voltage is less than 1.8v per cell

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